ABSTRACT OF THE DISCLOSURE

A passive, real-time obstacle detection system is provided that determines the presence of small, curvilinear objects such as power lines. The system generally comprises a payload system having an infrared image detection system, a crew interface having a display for the images, and software algorithms that perform image processing on the pixel images. The software algorithms employ Cellular Automata (CA) techniques to resolve the direction vectors of sub-pixels, and as such, line segments are produced that are subsequently linked for display to the flight crew. The CA techniques are further based on the "Game of Life" model, wherein local rules are used to determine how pixels evolve, or propagate along a line. The linked lines are then displayed for the flight crew so that evasive maneuvers can be performed as necessary.